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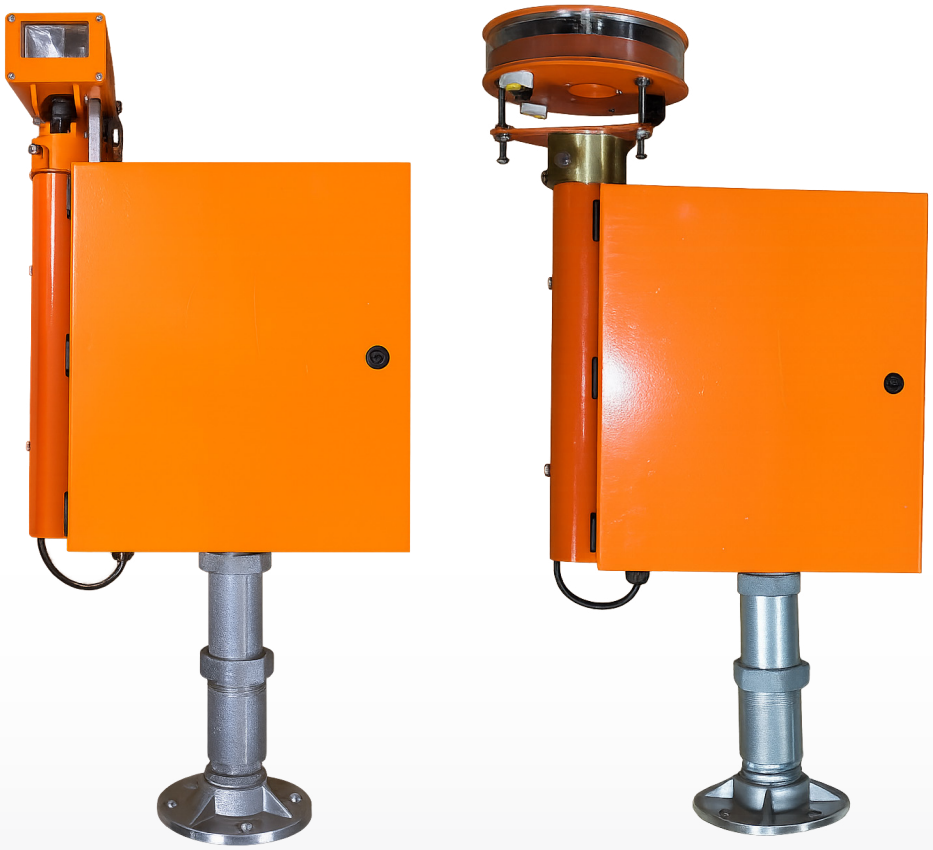
OWNER'S MANUAL



L-849(L) REIL
RUNWAY END INDENTIFICATION LIGHT
L-859(L) ODAL
OMNI DIRECTIONAL APPROACH LIGHT

DATA SHEET

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LED REIL – Runway End Identifier Light

Compliances (Current Editions)

FAA: AC 150/5345-51, EB67, ETL Certified

Canada: TP 312 5th Edition

Key Features

- Low annual energy costs
- Long-life LED for years of service
- High, medium and low intensity
- Primary/Secondary system operation
- Field programmable sequence timing
- Meets photometric beam requirements for MALSR, SSALR, and ALSF-I/II - Contact ALC Sales for product information
- No power adapter required
- True RMS current sensing
- Uni-directional or Omni-directional
- 50 or 60 Hz
- Flash monitoring
- Elapsed time meter
- Use two (2) L830-4 100W Isolation Transformers

General Catalog Numbers

84-□-□-□-□□

Head
O = Omni-Directional (Styles B, D, F)
U = Uni-Directional (Styles A, C, E)

Type
V= 95-264V, 50-60Hz
I = 2.8A to 6.6A

# of Legs
1 = 1 Leg
2 = 2 Legs

Options
A = Current Sense Module (Type V only)
B = Baffles (Head U Only)

Specifications

Photometric Data

		Effective Intensity (candelas (cd))		
Style	FPM	High	Med	Low
A	120	15,000	-	-
B	60	5,000	-	-
C	120	-	-	700
D	60	-	-	700
E	120	15,000	1,500	300
F	60	5,000	1,500	300

Physical Specifications

UNI Flashhead (84-90000)	Weight = 3.5lbs Dimensions = 7H x 5.25W x 6D
OMNI Flashhead (85-90000)	Weight = 5lbs Dimensions = 6.5H x 8H
Type V Power Supply (84-00905)	Weight = 4lbs Dimensions = 1.75H x 10W x 3.5D
Type I Power Supply (C7-LVCV2)	Weight = 1lb Dimensions = 2.5H x 7.25W x 2.5D
UNI Co-Mount (Enclosure + 84-90000)	Weight = 25lbs Dimensions = 22H x 15.25W x 6.5D
OMNI Co-Mount (Enclosure + 85-90000)	Weight = 26lbs Dimensions = 24H x 17W x 8D
Enclosure	Weight = 21lbs Dimensions = 16H x 12W x 6.5D

Specifications

Current-Powered

- 2.8 to 6.6 amperes
- Operates directly from 100W Isolation Transformers
- Current Sensing set-up at Primary Unit

Voltage-Powered

- 95-264VAC, 50/60Hz

Spare Components

Description	Part Number
UNI Directional Flashhead	84-90000
OMNI Directional Flashhead	85-90000
Universal Controller Card	84-00013
Sequential Controller Board	84-00014
Type-V Power Conditioning PCB	84-00904
Type-V Power Supply, 95-264Vin - 48Vout	84-00905
Type-I Power Supply, 6.6A	C7-LVCV2
Type-I Diode Bridge	C7-BRG
Type-I Gas Discharge Tube	C7-GDTH
Interlock Switch	55-00201
Frangible Coupling, 2" EMT	59-E

Equipment Data

Control	Remote, local, or automatic
Flash Rate	60 or 120 fpm
Uni Nominal Intensity	High 15,000; Medium 1,500; Low 300
Omni Nominal Intensity	High 5,000; Medium 1,500; Low 300
Uni Beam Spread	30° horizontal 10° vertical
Omni Beam Spread	360° horizontal 8° vertical

Type L-849(L) Peak VA Ratings

	Style	
Head U	**A/E**	**C**
Type I	157	62
Type V	289	171
Head O	**B/F**	**D**
Type I	139	64
Type V	136	88

DATA SHEET

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LED ODAL – Omni Directional Approach Light

Compliances (Current Editions)

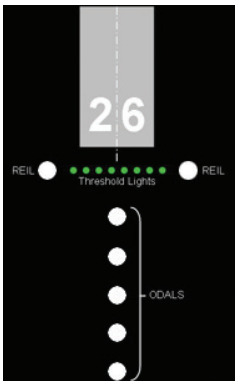
FAA: AC 150/5345-51, EB67, ETL Certified

Sections 5.3.1, 5.3.5 and 5.3.10

Intertek

Application

The primary application of an LED ODAL system is to positively identify the end or the threshold of a visual or instrument non-precision runway. An ODAL system consists of two synchronized flashing lights at Runway End, and five sequential flashing lights in line with Runway centerline to guide pilot to runway.



Omni-directional approach light system (ODALS)

General Catalog Numbers

85-□-□-□□

Type
V = 100-240V, 50/60Hz
I = 2.8A to 6.6A

# of Legs
0 = Wall Mount
1 = 1 Leg
2 = 2 Legs

Options
A = Current Sensing (Type V Only)
S# = Separate Mount (specify qty)

All units have co-mounted flash heads unless specified with Option S#

DATA SHEET

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Specifications

Photometric Data

		Effective Intensity		
Type	FPM	High	Med	Low
L-859	60	5,000	1,500	300

Physical Specifications

OMNI Flashhead (84-90000)	Weight = 5lbs Dimensions = 6.5H x 8H
Type V Power Supply (84-00905)	Weight = 4lbs Dimensions = 1.75H x 10W x 3.5D
Type I Power Supply (C7-LVCV2)	Weight = 1lb Dimensions = 2.5H x 7.25W x 2.5D
OMNI Co-Mount (Enclosure + 85-90000)	Weight = 26lbs Dimensions = 24H x 17W x 8D
Separate Mount Enclosure	Weight = 21lbs Dimensions = 16H x 12W x 6.5D

Equipment Data

Control	Remote, local, or automatic
Current	2.8A to 6.6A
Power (VA)	194VA
Flash Rate	60 fpm
Nominal Intensity	High: 5,000; Med: 1,500; Low: 300
Beam Spread	360° Horizontal, 8° Vertical

Specifications

Current-Powered

2.8A - 6.6A, 100W Isolation Transformer

Voltage-Powered

95-264VAC, 50-60Hz

Current-Sensing Module for intensity control

Spare Components

Description	Part Number
OMNI Directional Flashhead	85-90000
Universal Controller Card	84-00013
Sequential Controller Board	84-00014
Type-V Power Conditioning PCB	84-00904
Type-V Power Supply, 95-264Vin - 48Vout	84-00905
Type-I Power Supply, 6.6A	C7-LVCV2
Type-I Diode Bridge	C7-BRG
Type-I Gas Discharge Tube	C7-GDTH
Interlock Switch	55-00201
Frangible Coupling, 2" EMT	59-E
Flashhead Cable, 50'	55-00800-050
Flashhead Cable, 100'	55-00800-100
Flashhead Cable, 200'	55-00800-200

Key Features

- Lower cost of ownership
- High, medium and low intensity
- Robust primary control signal
- Field programmable sequence timing
- No power adapter required
- True RMS current sensing
- Current sensing set-up required at the Primary Unit Only
- Co-mounted or Separate mounted flashhead
- 50 or 60 Hz
- Flash monitoring
- Elapsed time meter
- Long-life LED for years of service

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Owner's Manual

ETL Certified to:
FAA AC 150/5345-51 and EB 67

Compliant to:
ICAO: Annex 14, Volume 1 (Current Edition)
T/C: Transport Canada TP 312

Manufactured by:
Airport Lighting Company
108 Fairgrounds Drive
Manlius, New York 13104
(315) 682-6460

Email: info@airportlightingcompany.com
Website: www.airportlightingcompany.com

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AirportLightingCompany
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Have Questions? Contact Us:

GENERAL INQUIRY: (315) 682-6460

EMAIL: info@airportlightingcompany.com

TECHNICAL SUPPORT: (866) 212-1060

EMAIL: support@airportlightingcompany.com

WEBSITE: www.airportlightingcompany.com

AirportLightingCompany
An ISO 9001:2015 Certified Company

108 Fairgrounds Drive
Manlius, New York 13104

Guarantee

Products manufactured by Airport Lighting Company (ALC) which use LEDs as a light source are warranted against mechanical and physical defects in design or manufacture for a period of 2 years from date of installation per the applicable FAA Advisory Circular and against electrical defects in design or manufacture of the LED or LED specific circuitry for a period of 4 years per FAA EB67D. ALC will correct such defects by repair or replacement, at its option, provided the products have been properly handled and stored prior to installation, properly installed and operated after installation, and provided further that the Buyer has notified ALC in writing within the warranty period and within a reasonable time after notice of such defects. Refer to handling, storage, installation and operational instructions for proper procedural guidance that must be followed to maintain warranty provisions.

This warranty is in effect for the specified term as long as the equipment, in ALC's judgment, has not been altered in such a way as to affect the equipment adversely, subject to accident, negligence, improper storage, and has been operated and maintained in accordance with accepted FAA guidelines as described in AC 150/5340-26 and ALC's published operational guidelines.

ALC reserves the right to examine products about which a claim has been made. Equipment must be presented in the same condition as when the defect was discovered. ALC also reserves the right to require the return of equipment to establish any claim.

Statement of Warranty

https://www.airportlightingcompany.com/terms-conditions/

Safety Precautions

- Read all instructions prior to installation of the system.
- All electrical connections must be to local codes.
- Do not remove or bypass any safety devices within the system.
- Ensure this manual is available to all personnel that may work on the system.
- Do not service or operate equipment while standing in water.

Failure to follow all instructions may result in injury or equipment failure.

The Airport Lighting Company (ALC) L-849(L) REIL and L-859(L) ODAL are voltage-powered or current-driven systems. L849(L) System will consist of two Optical Flashheads (OFH) co-mounted to a Primary Cabinet Unit (PCU) and Secondary Cabinet Unit (SCU). L859(L) ODAL System will consist of seven units with five sequentially flashing OFHs and two synchronized OFHs.

The system can operate as FAA Style A, B, C, D, E, or F (L-849 or L-859). The OFHs are used to light the threshold (approach end) of a visual or instrument non-precision runway and provide guidance to pilots during approach for landing. See Approach Lighting diagrams on page 6.

FAA Style	Flashhead Type	Intensities
A	Unidirectional	High
B	Omnidirectional	High
C	Unidirectional	Low
D	Omnidirectional	Low
E	Unidirectional	Low, Medium, High
F	Omnidirectional	Low, Medium, High

The OFHs receive flashing and other operating commands from the PCU and send monitored status information in return. Selected operating parameters are shown visually on the display inside the PCU. The SCU will only have a power supply, no user interface control board.

Operation is typically automatic, but flash intensity functions can be set to Maintenance mode for testing purposes. The OFHs flash simultaneously upon a single command from the Universal Controller Card (UCC) inside the PCU. The flash rate is 120 flashes per minute (FPM) for A, C, & E systems, 60FPM for B, D & F systems. See below table for system information.

This beam coverage is formed by the composite effect of an array of high-performance, white LEDs.

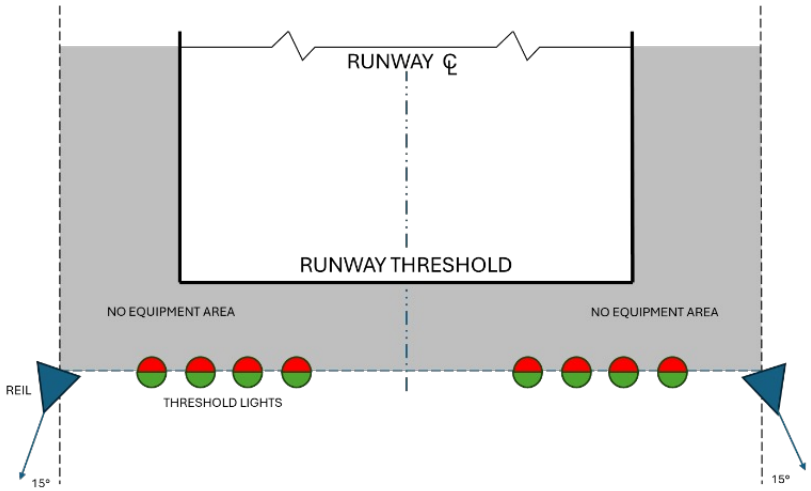
		Effective Intensity (candelas (cd))			Beam Patterns	
Style	FPM	High	Medium	Low	Vertical	Horizontal
A	120	15,000			10°	30°
B	60	5,000			2° - 10°	360°
C	120			700	10°	30°
D	60			700	2° - 10°	360°
E	120	15,000	1,500	300	10°	30°
F	60	5,000	1,500	300	2° - 10°	360°

The LED array is monitored in such a way that a failure exceeding a certain number of LEDs at random locations, will turn on an alarm signal light and cause an alarm relay to operate. The alarm relay is for external remote distribution.

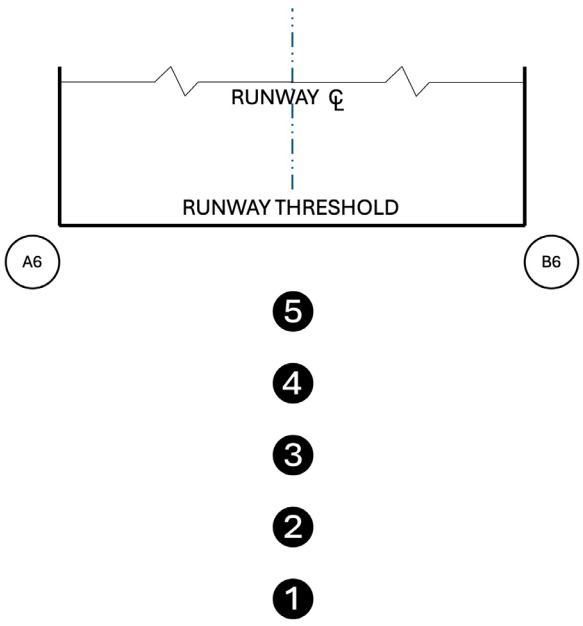
Fault notification is generated because of failure within the lighting system. The system fault is shown on the OLED screen within the PCU. A dry contact alarm is provided for remote monitoring.

General REIL & ODAL Layouts

Runway End Identification Lights (REIL)



Omni Directional Approach Lighting System (ODALS)



Theory of Operation

The ALC LED REIL is a microcontroller-based system. Each OFH consists of an optically enhanced, high performance, LEDs arranged withing a reflector cone for unidirectional systems or lensing for omnidirectional systems.

The PCU has a single Universal Controller Card (UCC) for all input and output functions. An RS-485 data bus provides communication between the PCU and the SCU. Each head communicates with the UCC, providing operational status information. Each head is identified by an address code for data tagging.

A low-capacitance data transmission line, suitable for RS-485 drivers and receivers, can support satisfactory communications at the baud rate of this system for up to 4000 feet. Recommend the use of a #18-AWG twisted pair shielded cable suitable for direct burial.

While the heads communicate only with the UCC, the UCC has connections outside of the system such as primary power, remote switching, and a remote alarm activating circuit. These external lines may be subjected to voltage surges or other electrical disturbances.

The internal electronics and flashhead are powered by either a voltage ranging from 95-264VAC, 50/ 60 Hz or a constant current ranging from 2.8A to 6.6A.

The OFH scans the LED collecting temperature, voltage, and flash information. An alarm signal is generated if either head develops an operating condition that falls below a prescribed safe level per FAA EB67D. Examples are (a) more than 25% failed LEDs per EB67 in a single head, (b) incomplete column of LEDs, or (c) incomplete row of LEDs. A fail-safe Alarm Relay (contacts close on fail) that can be used for remote alarm signaling is also activated.

The L-849(L) REIL system will be mounted at the end of the runway. One OFH will be placed at each side of the runway edge. Each device (PCU and SCU) will require a dedicated emplacement that includes a concrete foundation with 2" NPT female threaded receiver.

The L-859(L) ODAL system will consist of seven (7) lights with two lights mounted at end of runway (REIL) and five lights in a straight line out from the runway centerline. The ODAL flashhead may be separated from its controller enclosure per customer requirements.

Detailed drawings, provided by others, will indicate exact placement and installation of each system.

Unpacking

Light units should be stored and transported in original ALC shipping containers. Inspect and verify the light nameplate to ensure it corresponds to the site location and input power for installation. Visually inspect the light for any damage. If any damage is noted, immediately contact ALC for possible warranty claim. Claims should also be filed with the freight/shipping company. Repackage lights into original shipping containers until installation at runway end.

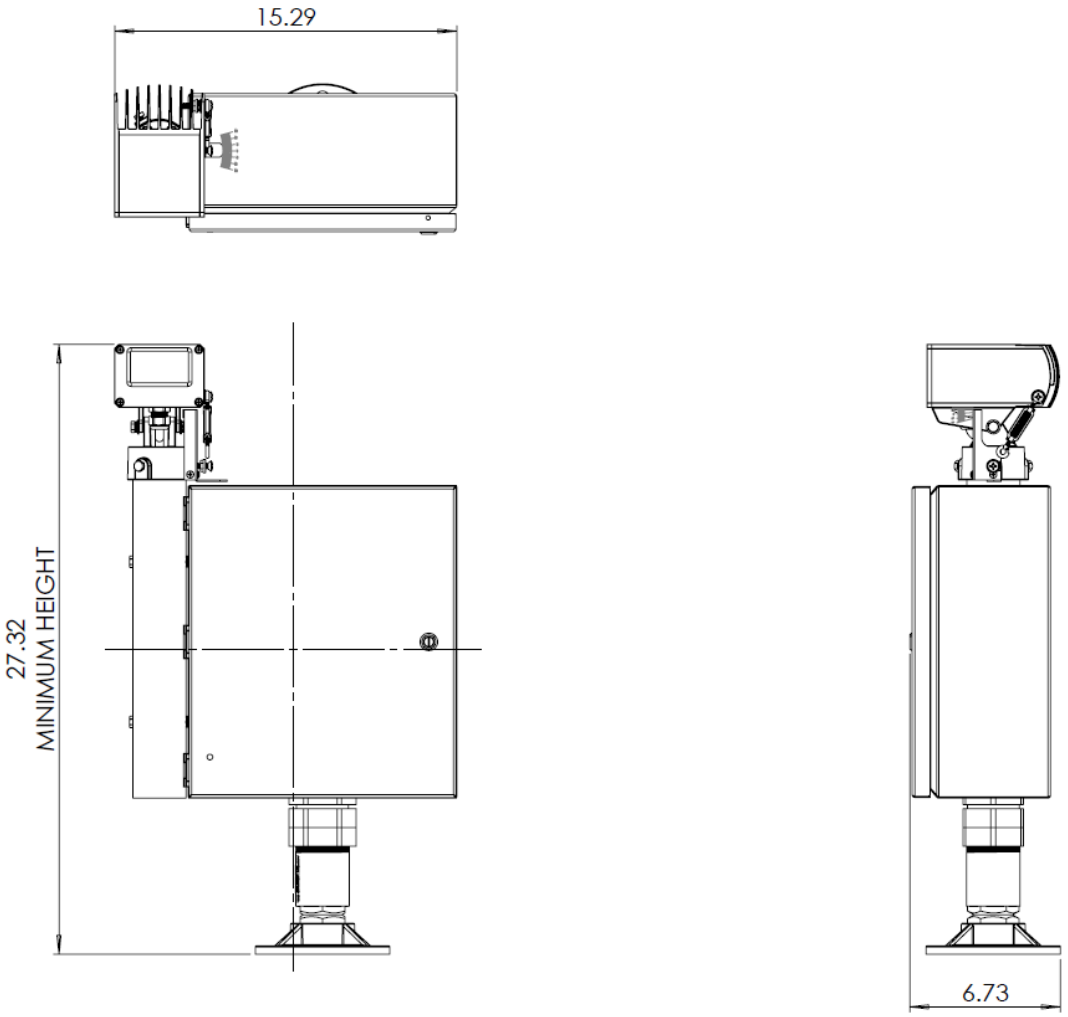
Tools Required

No special tools are required for installation of the system.

The following are the recommended tools for proper installation:

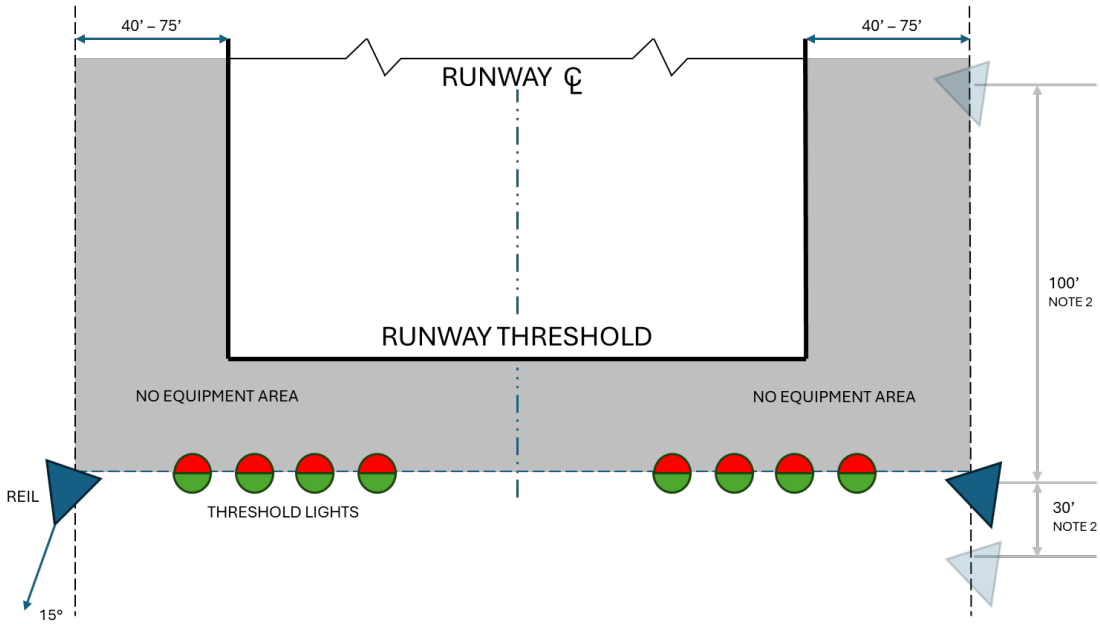
- **#2 Phillips screwdriver**
- **Flat blade screwdriver**
- **Micro flat blade screwdriver**
- **3/16 Allen Wrench**
- **3" Slip-joint pliers**
- **Wire Strippers**
- **Digital Multi-Meter (DMM)**

Dimensional Details



Typical Layout - REIL

The Runway End Identification Lights (REIL) are used for early identification of the runway and runway end. REILs are beneficial in areas having a large concentration of lights and areas of featureless terrain. The REILs must be installed where an aircraft is in a circling approach or non-precision straight in approach. The detail below is based off FAA AC 150/5340-30 Figure A-79.

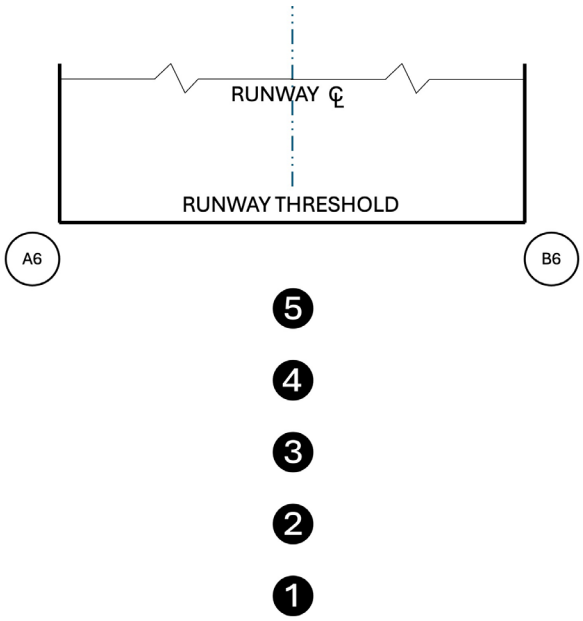


Layout Notes:

1. The optimum location for each light is in line with the runway threshold lights and extended between 40 feet (12.1m) to 75 feet (22.7m) from the runway edge.
2. Location of the lights can have an upwind and downwind longitudinal tolerance of 100 feet (30.4m) and 30 feet (9.1m), respectively, from the runway threshold lights.
3. Lights should be spaced equally from the runway centerline. When adjustments are required, the difference in the distance of the units must not exceed 10 feet (3m).
4. Typical optical beam placement of the light will be 15°outward from the runway centerline and inclined at 10° above the horizontal. If adjustments are required, the light should include a baffle and be set at 10° horizontally and 20° vertically.
5. Lights should be placed at a minimum of 40 feet (12.1m) from other runways and taxiways.
6. If REILs are used with a VASI (Visual Approach Slope Indicator), install the lights 75' (22.7m) from the runway edge. When installed with other glide slope indicators, lights will be installed 40' (12.1m) from the runway edge. See FAA Order JO 6850.2 for additional information on jet blasts and wind vortices.
7. Both lights must be at the same elevation and within 3 feet (0.9m) of the horizontal plane through the run way centerline.

Typical Layout - ODAL

The Omnidirectional Approach Lighting Systems (ODAL) are used for identification of the runway centerline and threshold. ODALs are beneficial during low visibility conditions during non-precision approaches. The system will consist of a line of five omnidirectional sequentially flashed lights and two synchronized lights at the runway threshold. The general detail below is based off FAA AC 150/5340-30 Figure A-80.



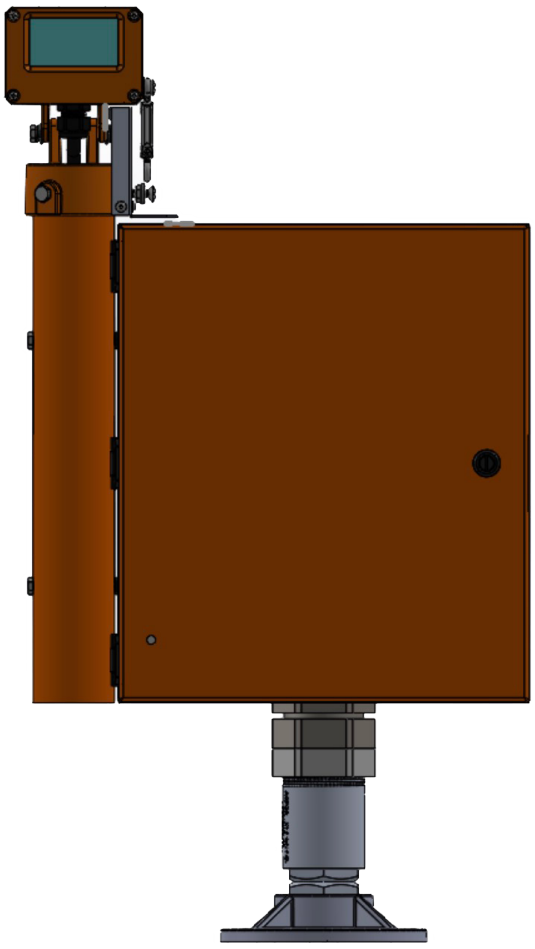
The flash pattern starts at Light 1 (❶) and continues down towards the runway threshold, creating a 'follow me' sequence. Finally, Lights A and B will flash in sync to indicate the location of the runway threshold. The total distance of the system is 1500' (365m) with a separation of 300' (91m) between each light location.

Primary & Secondary Unit Installation

The REIL PCU and SCU are provided with either a single or double bottom fed 2" EMT compression fitting. A length of 2" EMT and a compatible compression fitting threaded at one end are required. The EMT and fittings are supplied by others based on the site requirements and conditions. The ODAL PCU and SCU can also be provided as a wall mount. Mounting options selected by customer at time of ordering.

When the PCU or SCU is mounted on an in-ground base can, the EMT support is generally open to the can to allow wire passage. The units are shipped with a slotted foam plug to allow wire passage. **The foam plug is essential to prevent moisture from the base can entering the units.**

NOTE: Failure to install the foam plug or provide other means of preventing free air passage will allow condensation to collect within the enclosure. Failure to install plug will void equipment warranty.



REIL Optical Flashhead Aiming

Using the horizontal scale located on the flashhead align with the runway centerline. The scale range is ±15° with 1° increments. A metal pointer is affixed to the flashhead hub and indicates the aiming direction. The flashhead must be properly aligned or zeroed so it is parallel to the runway.

Zero the OFH by aligning the flashhead face parallel to the runway end. This can be accomplished by installing an aiming target 200 feet down range from the emplacement. Use the edge of the flashhead as a sightline and rotate the flashhead until it aligns with the target. Tighten the three hex bolts on the EMT mounting hub to lock in the alignment.

To set the OFH offset, the optical head must be rotated to match the site requirements. Slightly loosen the two hex bolts and setscrew on the optical head hub which contains the metal pointer. Rotate the head slowly until the pointer matches the defined angle for the emplacement. Firmly tighten the two hex bolts and setscrew.
Using the vertical scale on the flashhead, the unit will be adjusted to match the emplacement angle. The adjustment will be accomplished with the turnbuckle located on the backside of the flashhead. Typical alignment will have the OFH pointing upwards.

The OFH vertical scale should be zeroed. Rotate the turnbuckle until the spirit level bubble lies symmetrically between the reference lines. Slightly loosen the vertical pointer screw to allow the pointer rest on 0°. Tighten the pointer screw. Slowly adjust the turnbuckle to set the vertical angle required for the emplacement.

Vertical Scale - 0° to 15°

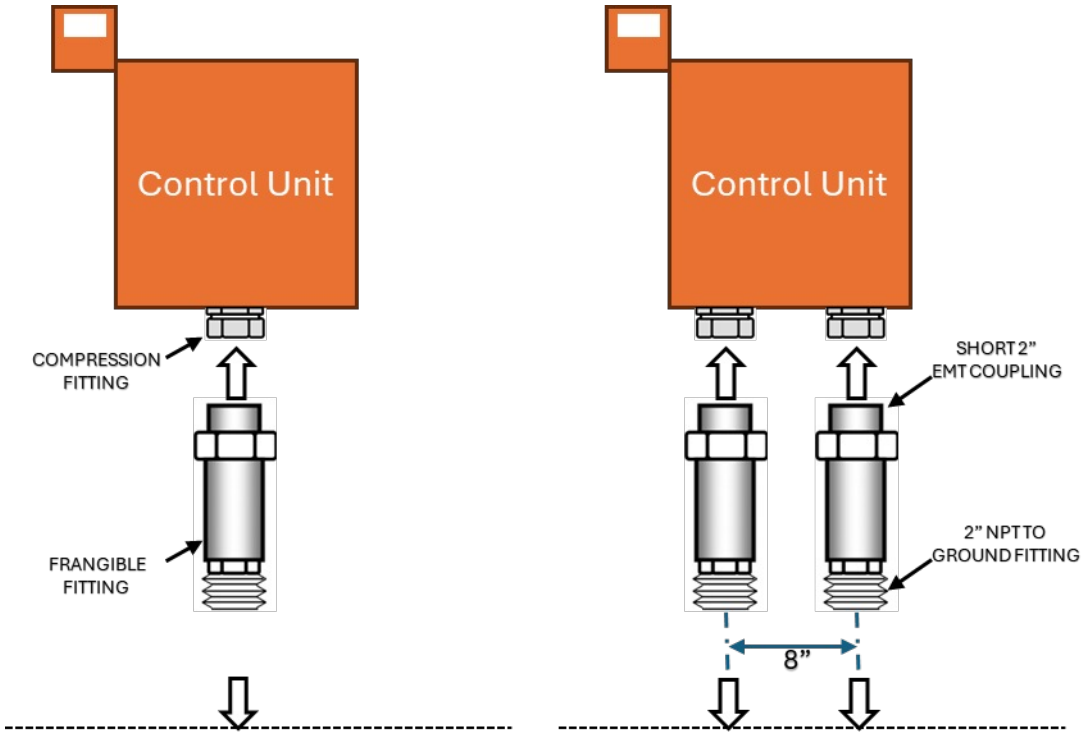
Horizontal Scale - +15° to -15°

Mounting Details

The REIL Control Units can be provided with either one or two 2" bottom openings per customer selection. When ordering with two openings, 2" NPT base supports at ground level such as NPT flanges anchored in concrete at a spacing of 8" center to center, or a burial can cover with threaded entrance holes at the required spacing.

The unit is provided with 2" EMT compression fitting(s). Frangible fitting(s) shipped with the equipment have male threads at one end and 2" EMT compression fittings at the other. Each one is furnished with a short 2-½" length of EMT by which they may be coupled to the compression fittings on the bottom of the power supply enclosure.

The frangible fittings must first be screwed into the ground supports and securely tightened. The EMT couplings must be adjusted to extend out of the frangible fittings by ¾" to 1" and the compression nuts securely tightened. Set the enclosure down over the EMT coupling(s) and securely tighten the compression nut(s).

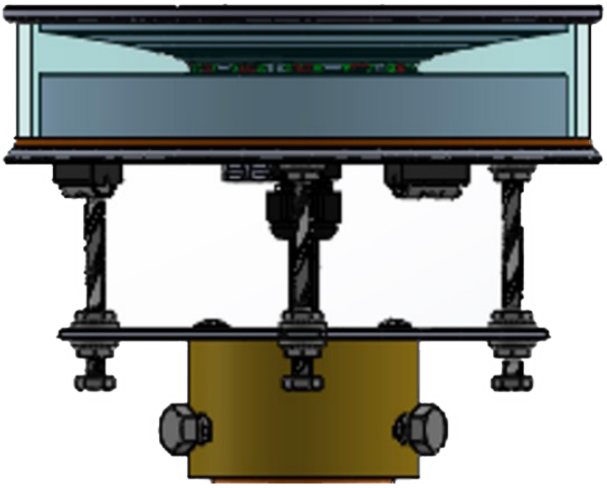


Single Leg Mount **Two Leg Mount**

ODAL Optical Flashhead Aiming

The ODAL has three (3) adjustable set screws to allow for leveling of the OFH. Flashhead is factory leveled, but adjustments may be required based on site conditions.

Use the two bubble levels located on the underside of the fixture to verify level. Loosen the three upper and lower nuts to allow the adjust of the needed screw(s). Tighten nuts to set at level.



SPECIFICATIONS

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Property	Item	Specification
Environmental	Operating Temperature	-40°F - +130°F (-40°C - +55°C)
	Storage Temperature	-55°F - +130°F (-55°C - +55°C)
	Salt Fog	Per FAA AC 150/5345-51
	Temperature Shock	Per FAA AC 150/5345-51
Electrical	Input Voltage	Type V - 95-264VAC, 50/60Hz Type I - 2.8A to 6.6A
	Power Consumption	L-849(L) See Table Below Type L-859(L) - 194VA
	Isolation Transformer	L830-4, 100W Transformers
	Lamp Type	LED
	Lamp Life	> 50,000 Hours
Photometric *(nominal)*	Light Color	White
	Main Beam Angle	Vertical: 10°, Horizontal 30°
	Intensity	High: 15,000cd Medium: 1500cd Low: 300cd
Mechanical	PCU Dimensions (h-w-d)	22" x 15.25" x 6.5" (559 x 387 x 165)
	PCU Weight	25 lbs. (11.4 kg)
	OFH Dimensions	7" x 5.25" x 6" (178 x 133 x 152)
	OFH Weight	3.5 lbs. (1.6 kg)

L-849(L) Peak VA Ratings

	Style	
Head U	**A/E**	**C**
Type I	157	62
Type V	289	171
Head O	**B/F**	**D**
Type I	139	64
Type V	136	88

Wiring during installation consists of bringing primary power and remote-control wiring to the PCU and then communication cables from the PCU to the SCU. SCU will require a dedicated power cable. All connections are made at terminal blocks that accept bare-wire insertions under screw clamps. No special wire termination tools are required.

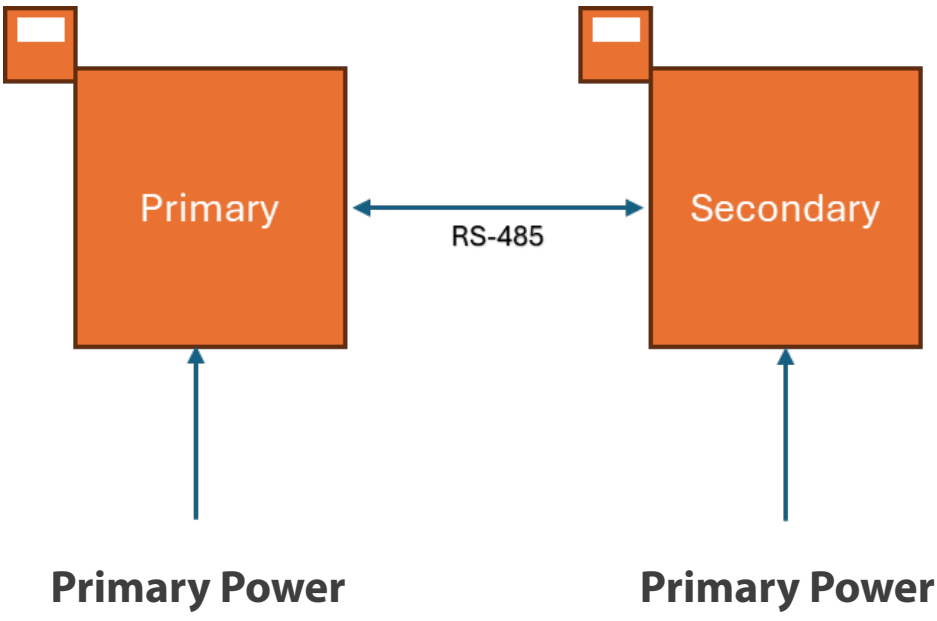
Voltage Driven systems wiring consists of three conductors. Two are required for 95-264VAC input and the third is for equipment ground. Conductor sizing based on site conditions.

Current Driven systems wiring consists of two conductors from the L-830 100W Isolation Transformer.

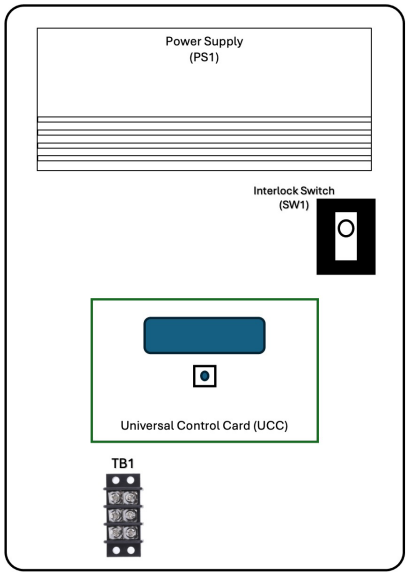
Communication wiring must satisfy the requirements for an EIA RS- 485 data bus. It must have three conductors: Two are for balanced-line data transmission (designated as 485-A and 485-B). The third is an isolated ground conductor (designated as GND) at the terminal blocks. Foil shielding should not be used as Ground connection.

Do not connect the GND conductor to chassis ground.

System alarm termination is provided for remote monitoring of the system. The dry contact alarm provides 'Close on Fail' or 'Open on Fail' contacts. Consult end user for proper wiring connections.

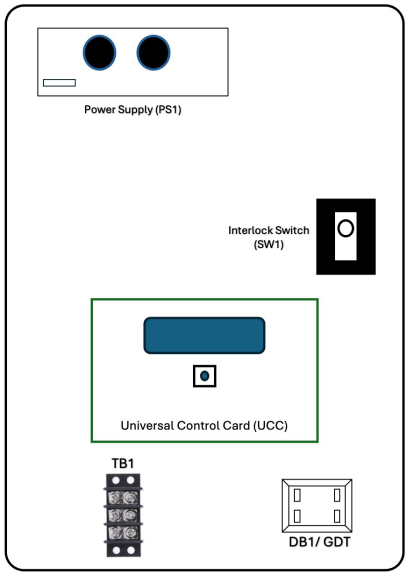


Primary Controller Unit Layouts



Voltage Driven

PS1 – Power Supply, 95-264VAC, 320W
SW1 – Interlock Switch & AC Surge Board
UCC – Universal Control Card with Display
TB1 – Input Voltage Terminal Block



Current Driven

PS1 – Low Voltage Power Module
SW1 – Interlock Switch
UCC – Universal Control Card with Display
TB1 – Input Voltage Terminal Block
DB1 – Bridge Rectifier

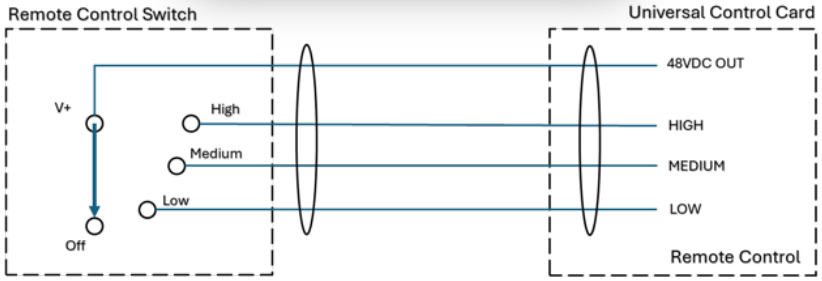
The UCC will provide all wiring connections for the primary REIL flashhead, secondary REIL flashhead, initial sequential flashhead, current sensing (voltage model only), remote control switching and alarm contact. Push button terminal blocks will be used for easy wire installation. The lever style terminal blocks will accept wire sizes between 24AWG to 12AWG.

PCU & Secondary Flashhead Input Wiring

TB1 is the input terminal block for Primary AC Power or Constant Current, located at the bottom of the panel. The voltage REIL will accept any voltage between 95-264VAC 50/60Hz. The current driven REIL will accept between 2.8A to 6.6A.

PCU Remote Control Wiring

Remote Control is compatible with an L-854 Radio Receiver or any switch that satisfies the function shown below. It consists of a four-wire circuit in which one of the conductors provides the switching voltage (V+, 48VDC). The other three are activated through a switch for Low, Medium, or High intensity. Remote Control terminations will be made on the UCC-J3 **REMOTE CONTROL** (upper left corner on UCC).

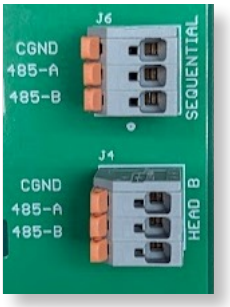


PCU & Secondary Flashhead Input Wiring

UCC-J4 **HEAD B** is the output terminal block for RS485 connection to the Secondary REIL flashhead.

RS-485 Communication cable should contain two #18-AWG conductors and a bare shield. Applicable cables should be suitable for direct burial or water exposure/below-grade conduit. The data transmission is phase sensitive; therefore, 485-A in the PCU must connect to 485-A in the OFH. Bare shield will connect to CGND.

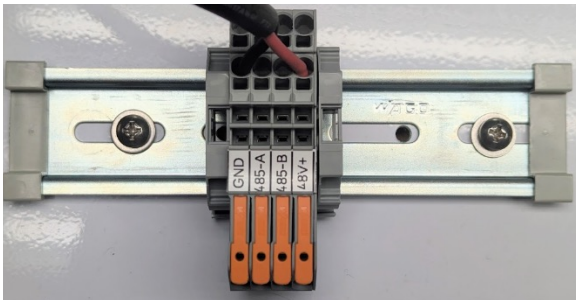
Do not connect the GND to chassis ground.



Secondary OFH Communications Wiring

Communication cable will match color code of PCU at GND, 485-A and 485-B.

Do not connect any wires to 48V+ as this will damage the UCC in the Primary Controller.



Alarm Wiring

The system will provide a single dry contact alarm point for remote monitoring. Alarm connections will be made at UCC-J7 **ALARM RELAY**. Option of wiring for Open on Failure or Close on Failure.

Current Sense Wiring

The REIL derives its flash level (low, medium, high) based upon the constant current level on the circuit. The REIL must be field set via menu options on CCR step (3 or 5). This adjustment will be accomplished through the UCC. The constant current will be wired at UCC-J8 **CURR. SENSE** with wires non-polarized, see above picture.

Set up will be based upon:

a. REIL Intensity Levels (Single (H) or Three Level (L/M/H))
b. Style of CCR (3-step or 5-step).

Lightning Protection

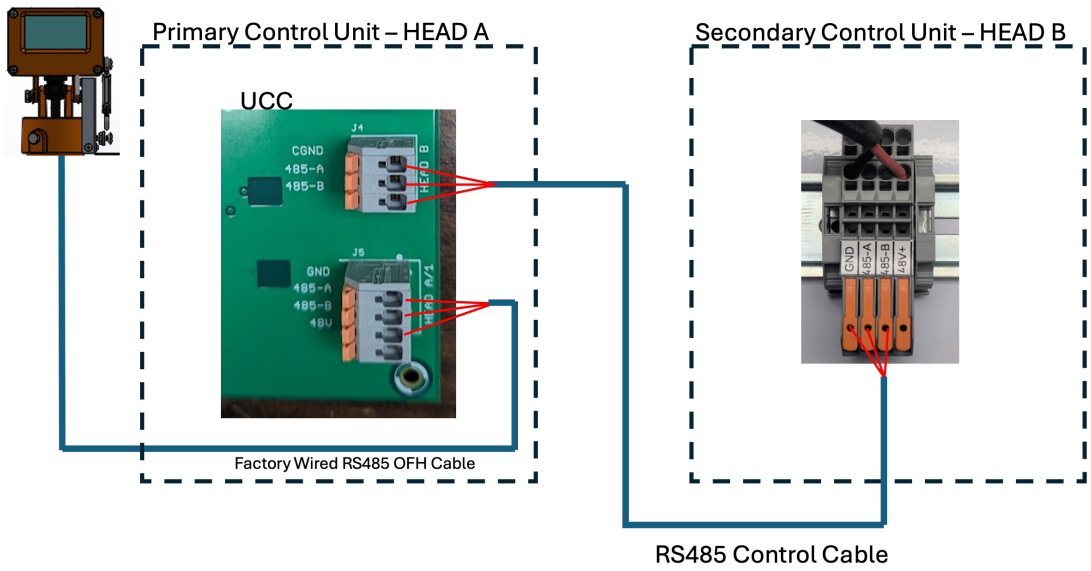
A local ground is required at each device for protection against lightning damage. An external ground lug is provided on the PCU and Secondary Flashhead cabinet. Recommended ground wire is a #2-AWG copper wire. Do not ground equipment to a counterpoise. **Failure to properly ground each device will void the warranty.**

Foam Plug Installation

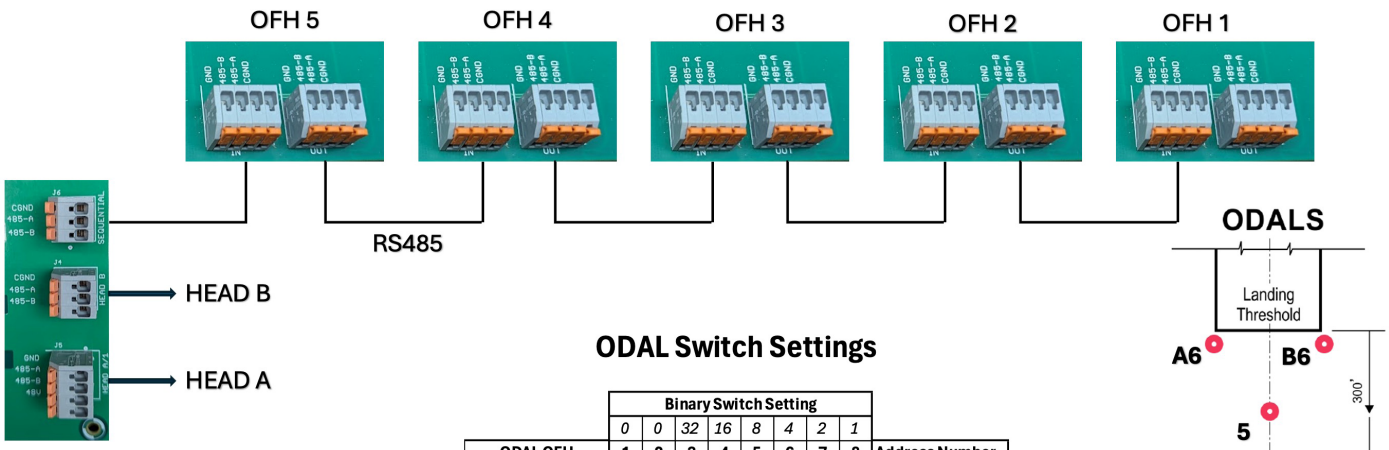
Use the FOAM PLUG when the supporting conduit opens directly to an IN-GROUND base can. Place any electrical conductors and/or cables into the provided slit as shown in Figure 1. Re-insert the foam plug into the conduit opening to make an environmental seal, Figure 2. Failure to use the conduit foam plug could lead to excessive formation of condensation during certain atmospheric conditions.

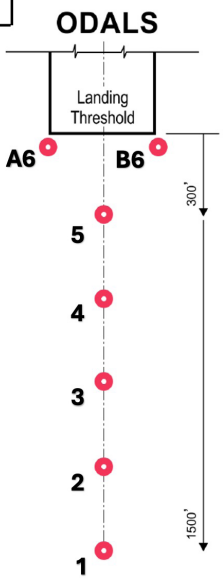
Warranty may be void if Foam Plug is not properly installed.

REIL System Interconnection Wiring



ODAL System Interconnection Wiring



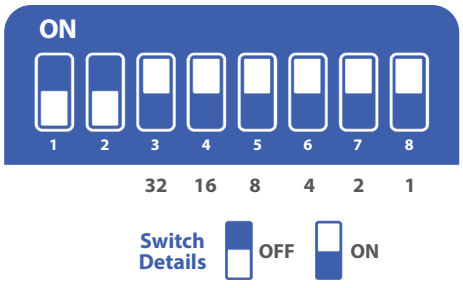


ODAL Switch Settings

	Binary Switch Setting								
	0	*0*	*32*	*16*	*8*	*4*	*2*	*1*	
ODAL OFH	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**Address Number**
A									A(6)
B									B(6)
5	0	0	X	0	X	X	X	X	47
4	0	0	X	X	0	0	X	X	51
3	0	0	X	X	0	X	X	X	55
2	0	0	X	X	X	0	X	X	59
1	0	0	X	X	X	X	X	X	63

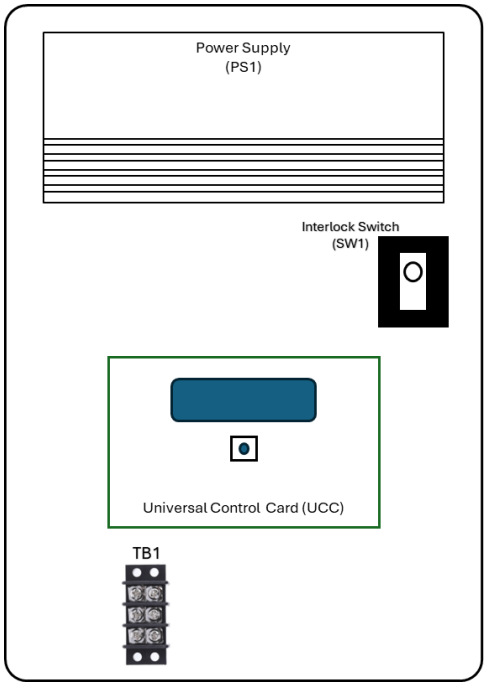
1 - First Light to Flash (X = ON, 0 = OFF)

Switch shown for Light 1 (63)



Note: 1 & 2 not used for numbering

The Primary Unit provides operational control of the entire lighting system.



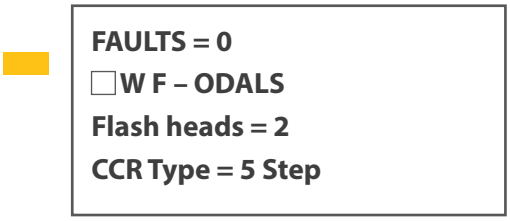
SW1 is provided in each device to disable the unit when the cover is removed. The plunger can be pulled up in a locked position to energize the system. The voltage REIL assembly will include a surge arrestor board mounted below the interlock switch.

UCC is the only circuit card in the lighting system. It is used to provide local, remote or maintenance mode of the system, FAA Style operation, and provide visual display of system status. Setup and control of the system is done with the push button rotary dial at the center of the board and four-line OLED display.

PS1 is used to provide the 48VDC required for powering the UCC and LED flashhead. The SCU will also include a PS1.

The system can be configured for multiple FAA L-849 Lighting Styles and as a L-859. The UCC utilizes a menu-based display and rotary dial to configure the system. The rotary dial will turn CW and CCW, as well as depressing for menu changes. The dial can rotate in either position (sitting or depressed). The four-line OLED display is used to provide visual details on systems operation, settings and faults.

Use the rotary dial to select the parameter that will be configured. Depressing the dial will allow modification of the selected parameter. The Yellow LED, left of the display, will illuminate if the parameter selected is able to be modified.



☐ *Indicates selected menu line*

The menu will provide 13 dedicated parameters for configuration of the system. Some parameters will only be informational.

Parameter	Description	Configurations
Style	FAA Lighting Style	Style A
		Style B
		Style C
		Style D
		Style E
		Style F – ODALS
CCR Type	Intensity Levels	3 Step 5 Step
Control Source	Intensity Control	Manual Remote Constant Current
Fw Version	UCC Firmware Version	
Alarm Status	No Fault = 0; Fault = 1	
Flash HiHrs	Operational Hours at High Intensity	
Head Index	Selection of Installed OFHs	
DIP Address	Display of selected OFH DIP Switch	
Confirmed Flash Count	Confirmed Flashes of selected OFH	
Defrost Status	Display of Defroster of selected OFH	
LED Fault Status	Display Fault Status of selected OFH	
Number OFH	Display installed OFHs	
Control Mode	Display of current operational Mode (Off, Maintenance, Low, Medium, High)	

Standard L-849 REIL Settings

Uni-directional, High Intensity, 1 Step, Remote

Style	A
CCR Type	5
Control Source	Remote
Number OFH	2

Uni-directional, 3 Intensities, 3 Step, CCR

Style	E
CCR Type	3
Control Source	CCR Current
Number OFH	2

TROUBLESHOOTING

This section provides general troubleshooting information on the REIL system. Most common issues are shown in the chart. If the issue is not listed below, please contact Airport Lighting Co. technical support for additional assistance.

Problem	Possible Cause	Solution
No Flash at either OFH	No Input Power	Verify proper input voltage of 95-264VAC 50/60Hz. Correct main input voltage source.
	Open/Bad Interlock Switch	Energize interlock by pulling up to lock into place. Verify voltage at Surge Board J2-L and J2-N. Replace Interlock Switch.
	Bad Comm Cable	Verify COMM A & COMM B match between PCU and SCUs Verify ~4.5VDC between COMM A & COMM B in OFH
One OFH not Flashing	Open/Bad Interlock Switch	Verify Cover is closed. Verify voltage from Interlock Switch when engaged. Replace Interlock Switch.
	OFH Power Supply failed.	Verify +48VDC on UCC-J2, +48V and GND. Replace Power Supply.
	OFH Fault Reported on UCC	Place PCU into MAINT mode and verify all OFH LEDs are lit. Replace faulty LED Module with shown bad LED(s). Replace faulty Control Board if LED array is out.
	OFH Fault Reported on UCC	OFH not communicating with UCC. Verify data comm connections. Verify ~4.5VDC between COMM A – COMM B in OFH. Correct Communication issue.
Brief Flash in One OFH (2-3 Flashes)	Bad Comm Cable	Verify proper communication cable connects.
Intermittent Flash Pattern	Bad OFH Control Board	Place UCC into MAINT mode and verify all OFH LEDs are lit. Replace faulty UCC.
	Bad LED Module	Replace faulty LED Module with shown bad LED(s).
Remote Control Issues	Selector Switch	Verify UCC is set to Remote
	Wiring Issue	Verify wiring between UCC-J3 and Remote Control device
	Open/Bad Interlock Switch	Energize interlock by pulling up to lock into place. Verify voltage at Surge Board J2-L and J2-N. Replace Interlock Switch.
	Bad Comm Cable	Verify COMM A & COMM B match between PCU and OFHs Verify ~4.5VDC between COMM A & COMM B in OFH

The LED REIL system should be properly maintained and inspected for reliable operation. The following chart will provide a guideline to follow to maintain the system.

Interval	Task	Action
Daily	Visual check of operation	Verify Operation Verify Flash Rate
Bi-Weekly	Visual check of lens	Clean Lens Check for cracks Check for condensation/moisture
	Check for vegetation growth	Remove any obstructions near system
Monthly	Verify OFH Alignment	Realign as required
	Verify Interlocks	Open PCU and SCU to verify safety devices
	Check for FOD within cabinets	Open cabinets and clean any debris
	Verify Manual Operation	Manually adjust mode of system
Yearly	Verify OFH Alignment	Realign as required
	Verify mounting columns	Align and tighten all EMT connections
	Check seals and foam plug	Verify all door seals and foam plug intact
	Check internally wiring	Verify all wires are seated and not damaged

Control Units

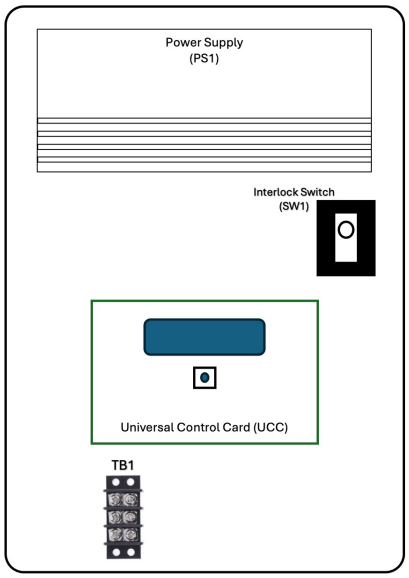
General Catalog Numbers

84-0□000-□

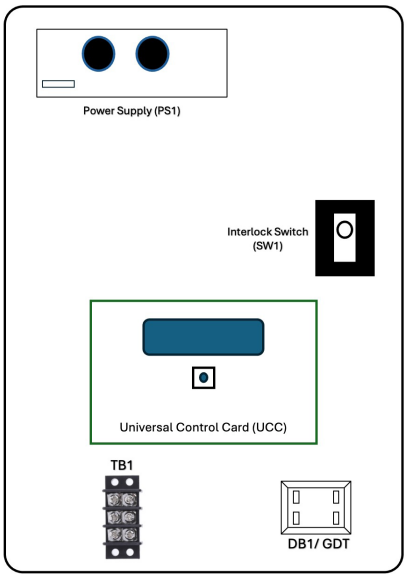
Mounting Type
1 = 1 Leg
2 = 2 Leg
3 = Wall Mount

Controller Type, Input
1 = Primary, Voltage
2 = Secondary, Voltage
3 = Sequential, Voltage
4 = Primary, Current
5 = Secondary, Current
6 = Sequential, Current

Primary Control Internals



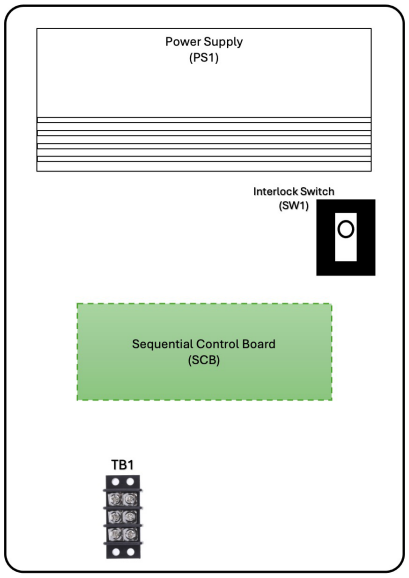
Voltage Driven



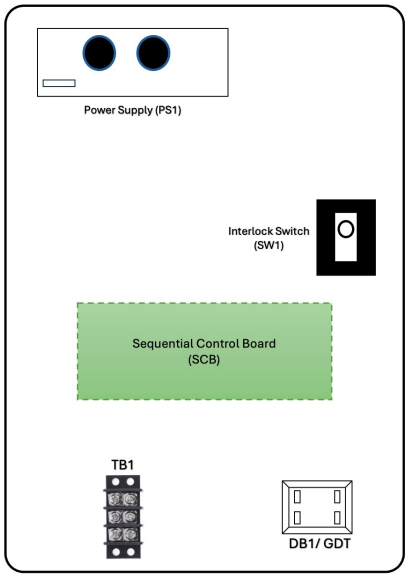
Current Driven

Item	Part Number	Description
OFH – UNI	84-90000	Unidirectional Optical Flashhead w/cable
OFH – OMNI	85-90000	Omnidirectional Optical Flashhead w/cable
PS1	84-00905	Power Supply, Voltage Driven
PS1	C7-LVCV2	Power Supply, Current Driven
UCC	84-00013	Universal Controller Card
DB1	C7-BRG	Diode Bridge
GDT	C7-GDTH	Gas Discharge Tube
SW1	55-00201	Interlock Switch
SW1S	84-00904	Power Conditioning Board *(Voltage Driven only)*

Secondary Control Internals



Voltage Driven



Current Driven

Item	Part Number	Description
OFH – UNI	84-90000	Unidirectional Optical Flashhead w/cable
OFH – OMNI	85-90000	Omnidirectional Optical Flashhead w/cable
PS1	84-00905	Power Supply, Voltage Driven
PS1	C7-LVCV2	Power Supply, Current Driven
DB1	C7-BRG	Diode Bridge
GDT	C7-GDTH	Gas Discharge Tube
SCB	84-00014	Sequential Control Board *(Style F, ALSF-2, SSALR, MALSR only)*
SW1	55-00201	Interlock Switch
SW1S	84-00904	Power Conditioning Board *(Voltage Driven only)*
OFH-Cable	55-00800-050	Flashhead Cable, 50'
OFH-Cable	55-00800-100	Flashhead Cable, 100'
OFH-Cable	5-00800-200	Flashhead Cable, 200'